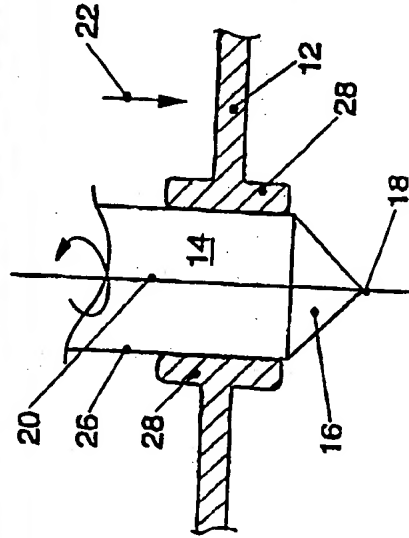


1999-562807/48

**VOLKSWAGEN AG**  
**Forming opening in exhaust pipe for reception of Lambda probe for internal combustion engine of motor vehicle**  
**DE-19811569-A1**



the required opening is formed by the flowing of a material of the exhaust pipe. The shaped bit is conically designed.

**Use:** Motor vehicle exhaust pipe with opening for Lambda probe.

**Advantage:** Provides simple and cost effective way of mounting lambda probe in exhaust pipe, without costly working steps e.g. cutting by laser. With flow method material is not removed but deformed.

**Description of Drawing(s):** The figures 1-3 show the progress steps for the making of an opening for a probe or a sensor in the exhaust pipe of a motor vehicle.

Shaped bit 14

Conical section 16

Tip 18

**Company Code:** VOLS

**Publication Date:** 1999/09/23

**Drawing:** 3/3

**Pages:** 4

**Inventors:** LOTZGESELLE G

**Derwent Codes:** S03-E15; X22-A03F

**IPC:** B23B 35/00; B21D 31/02; F01N 3/28

**Derwent Classes:** P52; P54; Q51; S03; X22

**Latest Priority:** 1998.03.17 1998DE-1011569

**Novelty:** The opening for the lambda probe is carried out using a shaped bit (14), which is axially rotated and acted on with a predetermined force in such a manner, so that its tip (18) is pressed against the exhaust pipe wall (12). So that